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Vulnerability, adaptation, and resilience to floods and climate change-related risks among marginal, riverine communities in metro Manila

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Abstract:

This study examines the vulnerability, adaptation, and resilience of urban poor households living in the riverine communities of the three flood prone areas in Metro Manila, namely, (1) Pasig-Marikina River basin, (2) West Mangahan, and (3) the KAMANAVA area (Kalookan, Malabon, Navotas, Valenzuela). Based on a survey of 300 urban poor households in 14 communities located in these flood basins, the study found that the environmental-ecological vulnerability of the low-lying flood prone areas interacts strongly with the social vulnerability of urban poor households, highlighting the effects of climate related changes (sea level rise, increased typhoons, intensity of monsoon rains, floods and tidal/storm surges) on this vulnerable population. Most of the households have low-incomes, live in slum/squatter settlements and do not have adequate access to potable water, electricity, health, sewage and sanitation facilities. About two-thirds of them suffered losses (e. g., income, work, health/sickness, household appliances/things, housing damage) from typhoons, floods, and tidal/storm surges but only a small portion of them obtained help from formal institutions (e. g., local government units or LGUs, charitable agencies) and informal support networks (relatives/neighbors/friends). Of these, a third of these households appeared more vulnerable and consistently incurred higher losses (e.g., income and workdays) and intense inconveniences (e.g., water source buried by floods, toilets blocked and overflowed with wastes/large worms to their floors) compared to their neighbors. Both urban poor households and their local governments have formulated adaptation strategies in response to the increasing effects of climate change. Few of the local governments built river barriers, improved their drainage systems, installed water diversion techniques (e.g., "bombastic") and disaster warning systems and increased the capacity of their officials to assist during evacuations. Meanwhile, some urban poor households have adapted to a "water-based lifestyle" (e.g., raising the floors/increasing the number of floors of their homes, building makeshift bridges among households in swampy areas, building Styrofoam boats for transport, etc.). But on the whole, both the urban poor residents and the formal institutions (LGUs, national agencies) need resources and capability building to increase their capacity to adapt to the effects of climate change.

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Resource Description

Communication: M

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

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Communication Audience: M

audience to whom the resource is directed

Public

Exposure: M

weather or climate related pathway by which climate change affects health

Extreme Weather Event

Extreme Weather Event: Flooding, Hurricanes/Cyclones

Geographic Feature: M

resource focuses on specific type of geography

Freshwater, Urban

Geographic Location: 🛚

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Philippines

Health Impact: M

specification of health effect or disease related to climate change exposure

Injury

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: M

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type: M

format or standard characteristic of resource

Research Article

Resilience: M

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to

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shifting climate impact circumstances while continuing to function

A focus of content

Timescale: **☑**

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: **☑**

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content